

Chemical functional groups of extractives, cellulose and lignin extracted from *Leucaena leucocephala* bark

ABSTRACT

Bark from trees is considered a worthless raw material. However, this resource could be economically beneficial if utilized efficiently due to its rich chemical compounds. In this study, an ethanol toluene-soluble extractive, alpha-cellulose and lignin obtained from *Leucaena leucocephala* bark were characterized to determine their chemical functional groups. Based on FTIR spectral analysis, the results indicated that the bands of the functional groups of the extractive from the original bark remain unchanged; however, the absorbance intensity was found to be weaker in the group frequency and fingerprint regions. Removal of extractive, pectin, hemicellulose and lignin from the bark indirectly increased the strong absorbance intensity of cellulose. Broad peaks of OH stretching found in all spectra were assigned to the presence of phenolic OH and aliphatic structures for extractive and aromatic structures of lignin. It was revealed that aromatic functional groups were mainly found in the extractive, while water, carbonyl and ether were the dominant groups in cellulose, and methyl, methylene, carbonyl and carboxyl groups were enriched in lignin.